MER Shift Reports

STS-107

Day 2 Shift 1

MER FLIGHT CREW EQUIPMENT- GFE/CFE
STS-107 SHIFT REPORT

TO: MER MANAGER

SUBJECT: FD02; 2nd SHIFT REPORT

GMT: 017:17:00

EVENTS:

Blue Team Awake and FCE Monitoring the following events:
Ergometer Setup
MEIDEX Checkout
Locker Stowage Update

No FCE issues with all monitored events.

No Post Insertion Issues reported.

FORWARD ACTIONS:
None

CHITS (Monitoring / Working / Waiting for Closure):
None

HARDWARE STATUS:
There have been no FCE anomalies recorded this reporting period. It is assumed all FCE is performing nominally.

Michael G. Kovich
Flight Crew Equipment- GFE/CFE

ORBITER ECLSS

STS-107 ECLSS SHIFT REPORT

FLIGHT DAY 2

SHIFT 1

All ECLSS systems performing nominally.

Consumables:	Supply water	301.9 lb.
	Waste water	49.0 lb.
	Orbiter Nitrogen	256.5 lb.

Group Leader
GMT 017/16:59

STS-107
OMS/RCS Day 2 Shift 1 Report

INITIATOR: Arrieta
DATE: January 17, 2003

MET: 01/00:12
GMT: 017/15:51
CENTRAL TIME: 09:50 AM CST

	Left		Right		Forward	
	Oxidizer	Fuel	Oxidizer	Fuel	Oxidizer	Fuel
PFS %	86.0	86.6	86.0	86.0	73.4	70.2
Interconnect Usage	0.000		0.000			

ORBIT

1. **Update: OMS-2** was a dual OMS engine firing occurring at TIG of 016/16:20:23.7 GMT with the cutoff at 016/16:22:24.4 GMT. The burn time was 120.7 seconds with a ΔV of 185.7 fps. The resulting orbit was 146.6 x 156.0 nmi.

Data Review

All vernier jet firing through 017/12:38:58.135 GMT have been reviewed. There have been no anomalous pulses.

RCS PRESSURIZATION LEG **FRCS: A** **LRCS: A** **RRCS: A**

23 of 38 primary thrusters have been fired. No new primary thrusters have been fired since the previous report:

F1F		**L1A**	**X**	**R1A**	**X**
F2F		**L3A**	**X**	**R3A**	**X**
F3F		L1L		R1R	
F1L		L2L		R2R	
F3L	**X**	**L3L**	**X**	**R3R**	**X**
F2R		L4L		R4R	
F4R	**X**	**L1U**	**X**	**R1U**	**X**
F1D	**X**	L2U		R2U	
F2D	**X**	L4U		R4U	
F3D	**X**	**L2D**	**X**	**R2D**	**X**
F4D	**X**	**L3D**	**X**	**R3D**	**X**
F1U	**X**	**L4D**	**X**	**R4D**	**X**
F2U	**X**				
F3U	**X**				

STS-107 ESD SYSTEMS SHIFT REPORT
DAY 2 SHIFT 1
GMT 017/17:00

Energy Division Subsystems (MPS, RCS, OMS, FC/PRSD, APU, and Hydraulics) continue to function satisfactorily with the following notes or exceptions:

HYD - System 3 Bootstrap accumulator pressure decayed at a rate faster than systems 1 or 2. The File IX DV58AV0.013 requirement specifies a decay rate of NMT 48 psi/hr applies from pressures of 2450-2300 psia.

Currently the decay rate on for STS-107

System 1 ~ 15.9 psi/hr
System 2 ~ 15.2 psi/hr
System 3 ~ 24.9 psi/hr

OV-102 has the new bellows type bootstrap accumulators, installed during OMM. The bellows accumulator has the GN2 pressure side welded closed which prevents loss of GN2, and the pressure sensor has been relocated to the hydraulic fluid side.

There was a similar OV-102 system 3 bootstrap accumulator pressure decay during STS-93 & 109.
The pressure decay rate during STS-93.
System 1 ~ 15.3 psi/hr
System 2 ~ 15.3 psi/hr
System 3 ~ 24.8 psi/hr

STS-109 Actual pressure decays over a 27 hour period are as follows:
System 1 ~ 13.3 psi/hr
System 2 ~ 14.5 psi/hr
System 3 ~ 24.5 psi/hr

The bootstrap accumulators are used to provide head pressure for the hydraulic main pumps. Circ pumps are used on orbit to automatically recharge the accumulators in the event of a pressure decrease in the bootstrap system. The accumulator pressure management software will issue the circ pump run command if accumulator pressure in the system is below 1960 psi.

FC/PRSD - Main busses B and C (fuel cells 2 and 3) were bus-tied at 016:16:58 GMT, 00/01:19 MET to support the payload power.

The PRSD oxygen tank heater current level detector checkout was performed. All of the heater sensors worked nominally. This procedure calls for the tank heaters to be turned on manually then verify that the sensor trips out the heater. The O2 tank 7 heater A1 and

A2 ON discretes did not come on. The B1 and B2 heater ON discretes did come on. Main bus current verified that the O2 tank 7 A heaters did not come on. MOD-EGIL is still discussing when to check out the auto function of these heaters. The B heaters will provide sufficient energy to the tank, so there is no concern about not being able to use the oxygen from O2 tank 7.

Flight Rule A9.1.6-2D states that with the loss of a tank heater, that tank should be used until the remaining consumables from the other tanks will support nominal EOM + 2 days. But CG concerns for early EOM call for tanks 4 and 5 to be depleted first, which are being used now.

OMS/RCS - OMS-2 was a dual OMS engine firing occurring at TIG of 016/16:20:23.7 GMT with the cutoff at 016/16:22:24.4 GMT. The burn time was 120.7 seconds with a Delta V of 185.7 fps. The resulting orbit was 146.6 x 156.0 nmi.

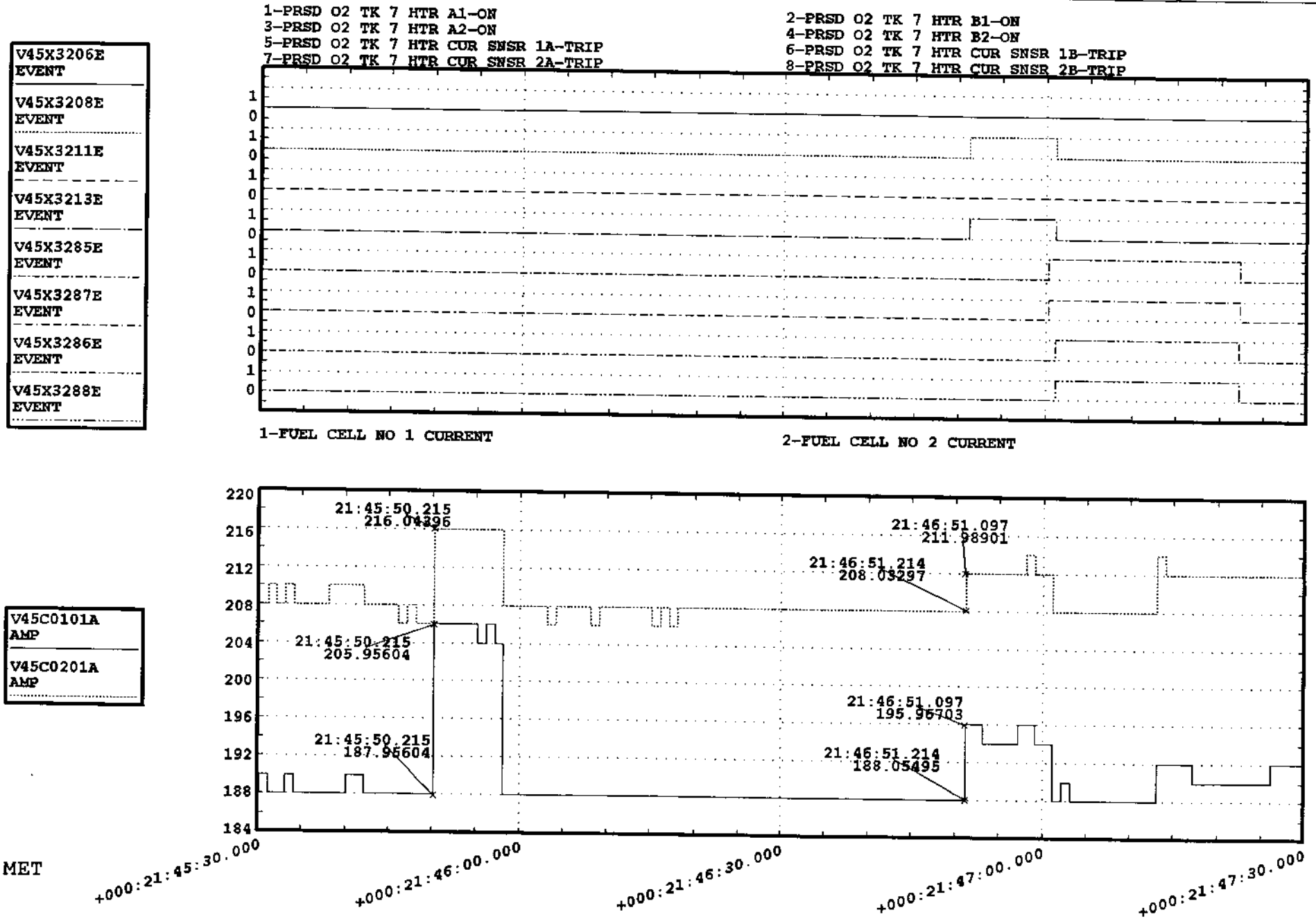
All vernier jet firing through 017/12:38:58.135 GMT have been reviewed. There have been no anomalous pulses.

RCS PRESSURIZATION LEG FRCS: A LRCS: A RRCS: A

23 of 38 primary thrusters have been fired. No new primary thrusters have been fired since the previous report:

Walter Scott
ESD Team Lead

O2 TANK 7 HEATER A & B POWER	M E W S	SAMPLE RATE: 1 (sec/sample)	Subsystem: prsd
	FORMAT: O7-HTRS	DATA: O2TKHTR	Flight: STS-107



AVIONICS
FLIGHT CONTROL / GNC DAILY REPORT

01/17/03

STS-107
Daily Report
Flight Day 1

Flight controls and GNC systems are performing nominally.

Chuck Beatty

STS-107
MER Comm and Track Shift Report.
GMT 017:15:00
Shift 1

All comm and track systems are operating nominally.

Jeff Stafford

MER Comm & Track

STS-107 (OV-102 FLT 28)
01/17/02
8:00 AM
On-Orbit Shift Report

All HYD/WSB parameters are operating within their expected ranges. Circulation pump 1 was run for elevon park at ~016/23:35 GMT. There have been no additional circ pump runs for either bootstrap repressurization or thermal conditioning.

System 3 Bootstrap accumulator pressure decayed at a rate faster than systems 1 or 2. The File IX DV58AV0.013 requirement specifies a decay rate of NMT 48 psi/hr applies from pressures of 2450-2300 psia.

Currently the decay rate on for STS-107

System 1 ~ 15.9 psi/hr
System 2 ~ 15.2 psi/hr
System 3 ~ 24.9 psi/hr

OV-102 has the new bellows type bootstrap accumulators, installed during OMM. The bellows accumulator has the GN2 pressure side welded closed which prevents loss of GN2, and the pressure sensor has been relocated to the hydraulic fluid side.

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The bootstrap accumulators are used to provide head pressure for the hydraulic main pumps. Circ pumps are used on orbit to automatically recharge the accumulators in the event of a pressure decrease in the bootstrap system. The accumulator pressure management software will issue the circ pump run command if accumulator pressure in the system is below 1960 psi.

Total Circ Pump Runs

Thermal	Accumulator Recharges
Sys 1: 1 for elevon Park	0
Sys 2: 0 runs	0
Sys 3: 0 runs	0

At this time the HYD/WSB group is working no issues.

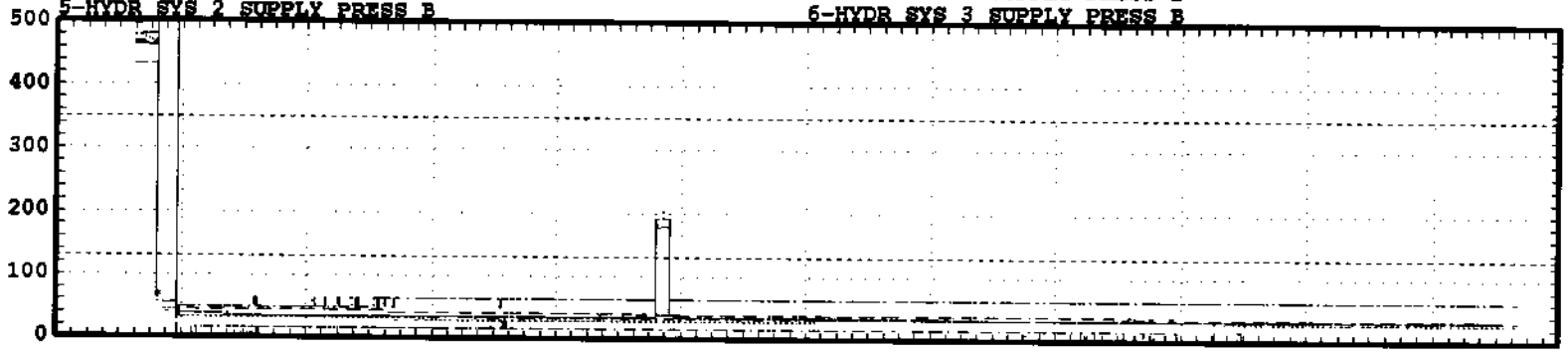
Jeffery S. Goza HYD/WSB SSE

CIRC PUMPS 1,2,3 - ON ORBIT OPERATIONS

M E W S	SAMPLE RATE: 120 (sec/sample)	Subsystem: hyd
FORMAT: ORBIT_CIRC123	DATA: MASTER	Flight: STS-107

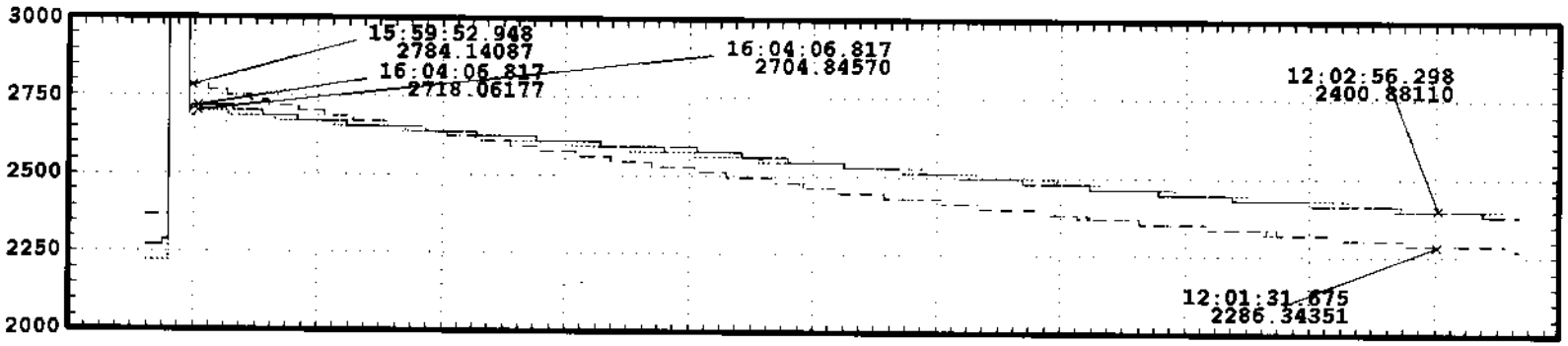
V58P0137A PSIA
V58P0237A PSIA
V58P0337A PSIA
V58P0115A PSIA
V58P0215A PSIA
V58P0315A PSIA

1-HYD SYS 1 CIRC PUMP PRESS
2-HYD SYS 2 CIRC PUMP PRESS
3-HYD SYS 3 CIRC PUMP PRESS
4-HYDR SYS 1 SUPPLY PRESS B
5-HYDR SYS 2 SUPPLY PRESS B
6-HYDR SYS 3 SUPPLY PRESS B



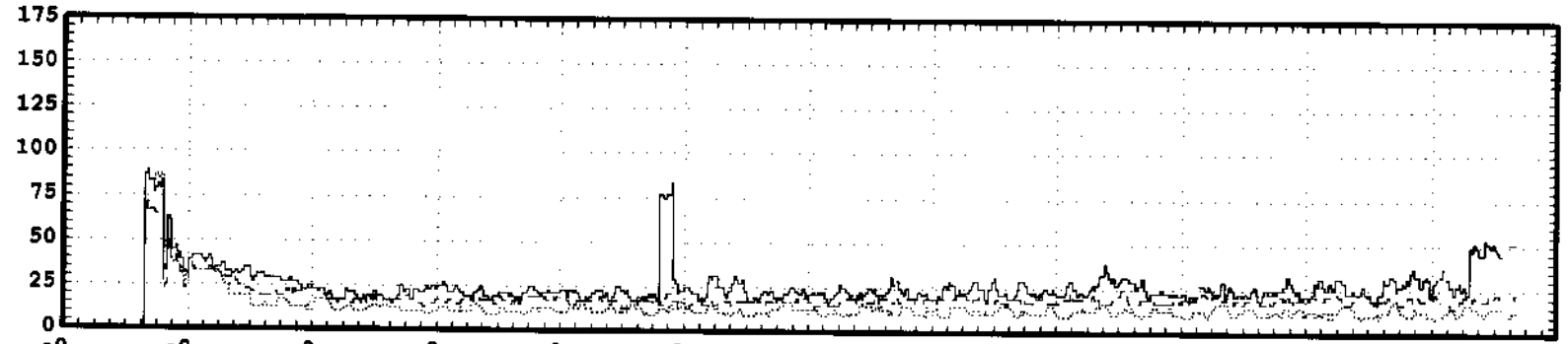
V58P0167A PSIA
V58P0267A PSIA
V58P0367A PSIA

1-HYD SYS 1 BOOTSTRAP ACCUMULATOR P
2-HYD SYS 2 BOOTSTRAP ACCUMULATOR P
3-HYD SYS 3 BOOTSTRAP ACCUMULATOR P



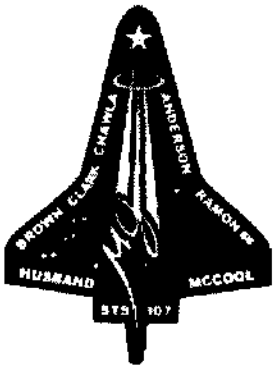
V76C3095A AMP
V76C3096A AMP
V76C3097A AMP

1-AFT PCA MAIN BUS A AMPS
2-AFT PCA MAIN BUS B AMPS
3-AFT PCA MAIN BUS C AMPS



GMT

2003_016:14:00:00.000
2003_016:16:00:00.000
2003_016:18:00:00.000
2003_016:20:00:00.000
2003_016:22:00:00.000
2003_017:00:00:00.000
2003_017:02:00:00.000
2003_017:04:00:00.000
2003_017:06:00:00.000
2003_017:08:00:00.000
2003_017:10:00:00.000
2003_017:12:00:00.000
2003_017:14:00:00.000



DPS PASS FSW, MEDS & H/W MER Shift Report

STS-107 **Date: 1/17/2003** **GMT: 017/17:00:00**
Shift: 1st

SYSTEM STATUS / ISSUES BEING WORKED

- All DPS systems performing nominally.

DPS Team Lead: Tom Swartley **Signature:** Tom Swartley

Thermal 1st Shift ~~Landing~~ Report FD2
STS-107
January 17, 2003 11AM (017/17:00 GMT)

The performance of orbiter thermal systems is nominal and all subsystem temperatures are operating within acceptable limits.

The actual launch trajectory is off from the preflight calculated trajectory in the current ATL. The incorrect state vector hopefully will be resolved by mid flight.

The current Pointer ATL would violate the MLG lower limit of +10F at NEOM. This current ATL does not include the TCS attitude recommendations discussed pre-flight. During pre-flight, Pointing agreed to implement approximate 8 hours of +ZSI followed by another 8 hours of –ZLV +YVV for NEOM thermal conditioning. In addition to the 16 hours above, four other periods of long –ZLV –XVV (starting at MET 11/02) were offered by Pointing as potential attitudes to change to –ZLV +YVV in order to protect the MLG lower limit at PLBD closure. TCS and EECOM are working together to implement the recommendation to ATL by mid-flight.

Diana Coronado/Than Nguyen

MER Shift Reports

STS-107

Day 2 Shift 2

STS-107 ESD SYSTEMS SHIFT REPORT
DAY 2 SHIFT 2
GMT 018/00:00

Energy Division Subsystems (MPS, RCS, OMS, FC/PRSD, APU, and Hydraulics) continue to function satisfactorily with the following notes or exceptions:

FC/PRSD - The troubleshooting plan for O2 tank 7 heaters has been submitted by EGIL to the Flight Director. The plan is to switch the O2 tank 4/5 heaters to OFF , then place the O2 tank 7 heater switches to the AUTO position. The tank pressures will then decay to the heater ON pressure. This will determine whether the "B" heaters only cycle ON, or both "A" and "B" heaters cycle ON. If the "A" heaters do not cycle ON, then O2 tank 6 "A" and "B" heater switches will be placed in AUTO. The heaters will be allowed to cycle, to determine if the O2 tank 7 "A" heaters cycle ON while paired with O2 tank 6 heaters.

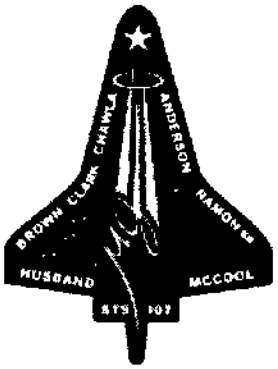
When the troubleshooting is completed, MOD will revert to using tanks 4 and 5 to depletion; then go to tank 7 by itself, rather than pairing it with tank 6.

Tom Davies
ESD Team Lead

MER Shuttle Safety Console
STS-107 FD 2 Shift 2
GMT 018:01:00

The MER Safety Console is not working any safety of flight issues.

Ross Engle



DPS PASS FSW, MEDS & H/W MER Shift Report

STS-107 **Date: 1/17/2003** **GMT: 018/01:00:00**
Shift: 2nd

SYSTEM STATUS / ISSUES BEING WORKED

- All DPS systems performing nominally.

DPS Team Lead: Chris Thames **Signature:** Dale C Thames

STS-107 MER Thermal 2nd Shift Report

018/01:00 GMT, 19:00 CST 01/17/2003

All thermal systems are performing nominally and all temperatures are within acceptable limits.

S. Tidwell/G. Gonzales

MER FLIGHT CREW EQUIPMENT- GFE/CFE
STS-107 SHIFT REPORT

O: MER MANAGER

SUBJECT: FD02; 3rd SHIFT REPORT

GMT: 018:01:00

EVENTS:

RED TEAM AWAKE
Advanced Respiratory Monitoring System (ARMS) Experiment performed well during this shift.
Mechanics of Granular Materials (MGM) Experiment also performed well. Only one value (Step 24, P02, value 115) was out of range.
Downlinked video of Pre-launch/Launch and Post-Insertion was recorded at GMT 017:23:41:00- 017:46:00.

FORWARD ACTIONS:
None at this time

CHITS (Monitoring / Working / Waiting for Closure):
There are only 4 CHITs in the system, all CLOSED. NONE belong to Flight Crew Equipment.

HARDWARE STATUS:
There have been no FCE anomalies recorded this reporting period. It is assumed all FCE is performing nominally.

Generoso C. Jacinto III
Flight Crew Equipment- GFE/CFE

ORBITER ECLSS

STS-107 ECLSS SHIFT REPORT

FLIGHT DAY 2

SHIFT 2

All ECLSS systems performing nominally.

Consumables:	Supply water	310	lb.
	Waste water	59	lb.
	Orbiter Nitrogen	252	lb.

Karen Thacker
GMT 018/02:46

MER Shift Reports

STS-107

Day 2 Shift 3

Thermal 3rd Shift Report

STS-107, January 18, 2003
3 AM, MET 01/17:21 (18/09:00 GMT)

All temperatures are within acceptable limits and all thermal systems are operating nominally.

Tim Davies / Dave Norman

MER FLIGHT CREW EQUIPMENT- GFE/CFE
STS-107 SHIFT REPORT

TO: MER MANAGER

SUBJECT: FD03; 1st SHIFT REPORT

GMT: 018:09:00

EVENTS:

Erratic telemetry readings received during MEIDEX setup. Probable cause is ground problems at Goddard.
PhAB4 frozen saliva samples collected on time.

FORWARD ACTIONS:

None at this time

CHITS (Monitoring / Working / Waiting for Closure):

There are only 4 CHITs in the system, all CLOSED. NONE belong to Flight Crew Equipment.

HARDWARE STATUS:

There have been no FCE anomalies recorded this reporting period. It is assumed all FCE is performing nominally.

Gerard Szymczak
Flight Crew Equipment- GFE/CFE

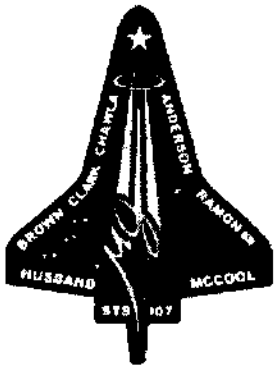
STS-107 ESD SYSTEMS SHIFT REPORT
DAY 1 SHIFT 3
GMT 018/09:00

Energy Division Subsystems (MPS, RCS, OMS, FC/PRSD, APU, and Hydraulics) continue to function satisfactorily with the following notes or exceptions.

OMS/RCS - The OMS crossfeed line was repressurized.

FC/PRSD – The trouble shooting plan for the O2 tank 7 heater issue was performed. The 02 tank 7 "A" heaters functioned properly when switched to the "AUTO" position. One full heater cycle was completed. System was configured back to the normal "AUTO" mode. The heaters did not work during the current sensor level detector checkout which is done in the manual mode.

John Norris
ESD Team Lead



United Space Alliance

DPS PASS FSW, MEDS & H/W MER Shift Report

STS-107 **Date: 1/18/2003** **GMT: 018/09:00:00**
Shift: 3rd

SYSTEM STATUS / ISSUES BEING WORKED

- All DPS systems performing nominally.

DPS Team Lead: Christy Limero **Signature:** Christy Limero

ORBITER ECLSS

STS-107 ECLSS SHIFT REPORT

FLIGHT DAY 3

SHIFT 3

All ECLSS systems are performing nominally.

Consumables:	Supply water	314.3 lb.
	Waste water	62.9 lb.
	Orbiter Nitrogen	247.9 lb.

Group Leader
GMT 018/08:53

MER Shuttle Safety Console
STS-107 FD 2 Shift 3
GMT 018:20:20

The MER Safety Console is not working any safety of flight issues.

Jeff Peters